



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,366	01/13/2004	Franklin W. Dabby	89171.0004	3346
26021	7590	10/06/2005		
HOGAN & HARTSON L.L.P. 500 S. GRAND AVENUE SUITE 1900 LOS ANGELES, CA 90071-2611			EXAMINER DUPUIS, DEREK L	
			ART UNIT 2883	PAPER NUMBER

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EX

Office Action Summary	Application No. 10/757,366	Applicant(s) DABBY, FRANKLIN W.	
	Examiner Derek L. Dupuis	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
 4a) Of the above claim(s) 6-8 and 14-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 9-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/13/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-13, drawn to an integrated electro-optic circuit, classified in class 385, subclass 14.
 - II. Claims 14-22, drawn to a method of manufacturing an integrated electro-optic circuit, classified in class 438, subclass 65.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the integrated circuit of Invention I could be manufactured without the method step of providing an optical signal detecting electrical element as done in Invention II.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. Because these inventions are distinct for the reasons given above and the search required for Invention II is not required for Invention I, restriction for examination purposes as indicated is proper.

Art Unit: 2883

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. This application contains claims directed to the following patentably distinct species of the claimed invention:

7. Invention I contains the following species:

Species A is an integrated electro-optic circuit including a region in the buffer layer having an increased index of refraction with respect to the index of refraction of the buffer layer. Claims 1-5 and 9-13 are directed towards this species.

Species B is an integrated electro-optic circuit including a region in the buffer layer having a periodic grating. Claims 1-4, 6, and 9-13 are directed towards this species.

Species C is an integrated electro-optic circuit including a region in the buffer layer having a photovoltaic material. Claims 1-4, 7, and 9-13 are directed towards this species.

Species D is an integrated electro-optic circuit including a region in the buffer layer having a thermo-optic material. Claims 1-4 and 8-13 are directed towards this species.

8. Invention II contains the following species and sub-species:

Species W is a method for manufacturing an integrated electro-optic circuit including performing a specific step by plasma enhanced chemical vapor deposition. Claims 14-19, 21, and 22 are directed to this species.

Species X is a method for manufacturing an integrated electro-optic circuit including performing a specific step by a sol-gel process. Claims 14-18, 21, and 22 are directed to this species.

Art Unit: 2883

Sub-species Y is a method for manufacturing an integrated electro-optic circuit including performing a specific step by chemical etching. Claim 21 is directed to this species.

Sub-species Z is a method for manufacturing an integrated electro-optic circuit including performing a specific step by ultraviolet masking. Claim 21 is directed to this species.

Should applicant elect Invention II, applicant must also elect one of either Species W or Species X and one of either Sub-species Y or Sub-species Z.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1-4 and 9-13 are generic to Invention I. Claims 14-18 are generic to Invention II.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the

Art Unit: 2883

examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

9. During a telephone conversation with Troy Schmelzer (Reg. No. 36,667) on 9/22/2005 a provisional election was made without traverse to prosecute the invention of Species A of Invention I, claims 1-5 and 9-13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 6-8 and 14-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Information Disclosure Statement

10. The information disclosure statement (IDS) submitted on 1/13/2004 has been considered by the examiner.

Drawings

11. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the hand-drawn figures are in some places not clear. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-5, 9, 10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yamamoto et al (US 6,078,70)* in view of *Lange et al ("High Gain Short Length Phosphate Glass Erbium-Doped Fiber Amplifier Material" NPL)*.

14. Yamamoto et al teaches an integrated electro-optic circuit comprising a semiconductor substrate composed of a material suitable for use as a detector of a predetermined signal wavelength and an electronic circuit layer positioned on the substrate. The circuit also includes a buffer layer positioned on the circuit layer and a waveguide layer positioned on the buffer layer wherein the waveguide layer is formed of phosphate glass. Yamamoto et al also teach a cladding layer disposed on the waveguide layer where an index of refraction of the waveguide layer is greater than that of the cladding layer and the buffer layer. The electronic circuit layer includes an optical sensor for detecting a coupling signal comprising a portion of a photonic communication signal propagating in the waveguide (see column 13, lines 15-65). The circuit also includes a light signal tap for directing the coupling signal towards the sensor. The tap includes a region of the buffer layer that has an increased index of refraction with respect to the index of refraction of the buffer layer (see column 19, lines 1-62). Yamamoto et al teach that the substrate can comprise silicon.

15. Yamamoto et al do not teach that the phosphate glass waveguide layer is doped with an amplifying material. Lange et al teach using Er and Yb to dope a phosphate glass waveguide (see page 2) and that the waveguide can be used to transmit wavelengths between 800 and 1800 nm (see figure 3).

16. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the circuit of Yamamoto et al by using a Er-Yb-doped waveguide as taught by Lange et

Art Unit: 2883

al. Motivation to do this would be that Er-Yb-doped waveguides have a significant capacity for large gain per length coefficients which leads to the ability to achieve large gain in compact devices (see page 2 of Lange et al).

17. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Yamamoto et al (US 6,078,70)* in view of *Lange et al ("High Gain Short Length Phosphate Glass Erbium-Doped Fiber Amplifier Material" NPL)* as applied to claims 1-5, 9, 10, and 12 above, and further in view of *Han et al (US2004/0076813 A1)*.

18. Lange et al teach that the waveguide transmits signals between 1100 nm and 1600 nm. However, neither Yamamoto et al nor Lange et al teach that the substrate comprises gallium aluminum arsenide. Han et al teaches that several different types of substrates can be used in optical devices including silicon and gallium aluminum arsenide (see paragraph 15). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the device of Yamamoto et al in view of Lange et al to use a germanium substrate as taught by Han et al since it is well known and routine to use AlGaAs substrates in opto-electronic devices.

19. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Yamamoto et al (US 6,078,70)* in view of *Lange et al ("High Gain Short Length Phosphate Glass Erbium-Doped Fiber Amplifier Material" NPL)* as applied to claims 1-5, 9, 10, and 12 above, and further in view of *Harchanko et al (US 2005/0147925 A1)*.

20. Yamamoto et al nor Lange et al teach that the substrate is made of germanium. However, Harchanko et al teach that several different types of substrates can be used in optical devices depending on the desired wavelength transmission range including silicon and germanium. Harchanko et al teach that a germanium substrate can be used for wavelengths greater than 2000

Art Unit: 2883

nm (see paragraph 48). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the device of Yamamoto et al in view of Lange et al to use a germanium substrate as taught by Harchanko et al since it is well known and routine to use germanium substrates in opto-electronic devices for processing signals with high wavelengths.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek L. Dupuis whose telephone number is (571) 272-3101. The examiner can normally be reached on Monday - Friday 8:30am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Derek L. Dupuis
Group Art Unit 2883



Frank G. Font
Supervisory Patent Examiner
Technology Center 2800